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(54) Mattress cover

air and to water.

(57) A removable mattress cover which is substantially impermeable to water so as to protect the mattress from wetting as by children or incontinent persons.

The cover comprises a fabric panel 3b for overlying the upper surface of a mattress 13 and it is provided with means, for example a skirt 14, for releasably engaging the mattress and holding the panel 3b in the overlying position. The panel 3b comprises a fibrous textile fabric which is bonded on its underface (when lying in the overlying position) to a flexible layer which is substantially impermeable to water. The fibrous textile fabric may have a pile on its exposed face and it may be a stretch fabric. The flexible layer which is bonded to the fibrous textile fabric may be permeable to

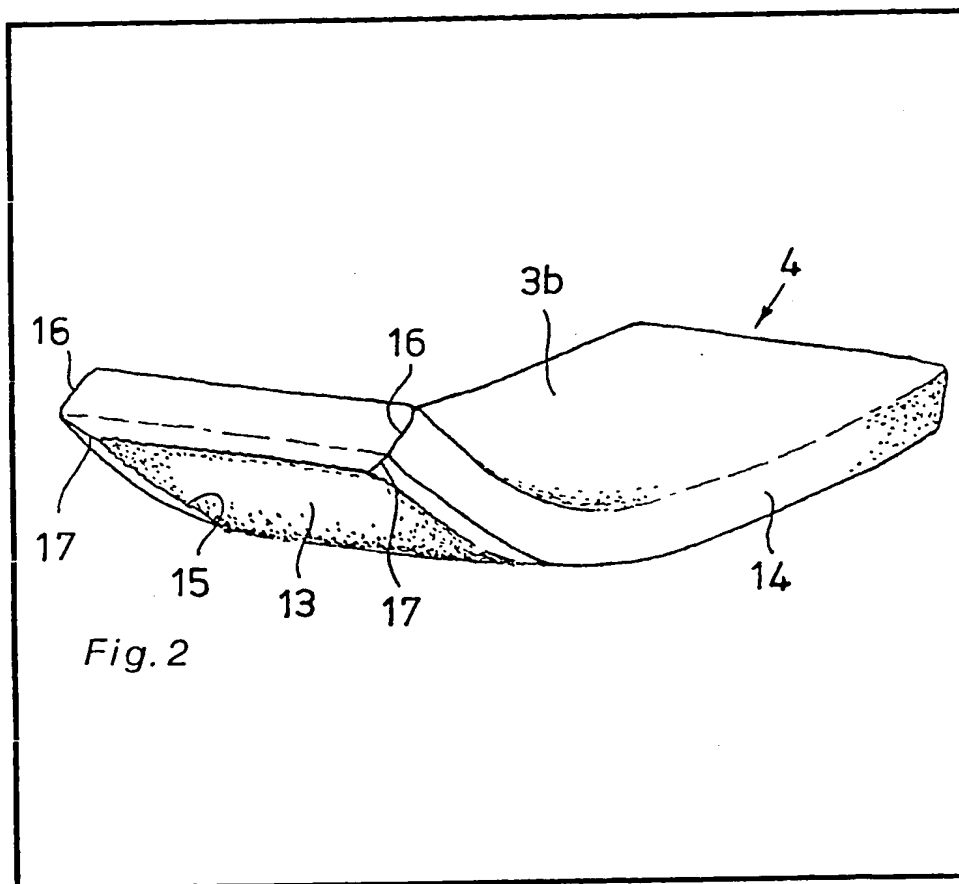


Fig. 2

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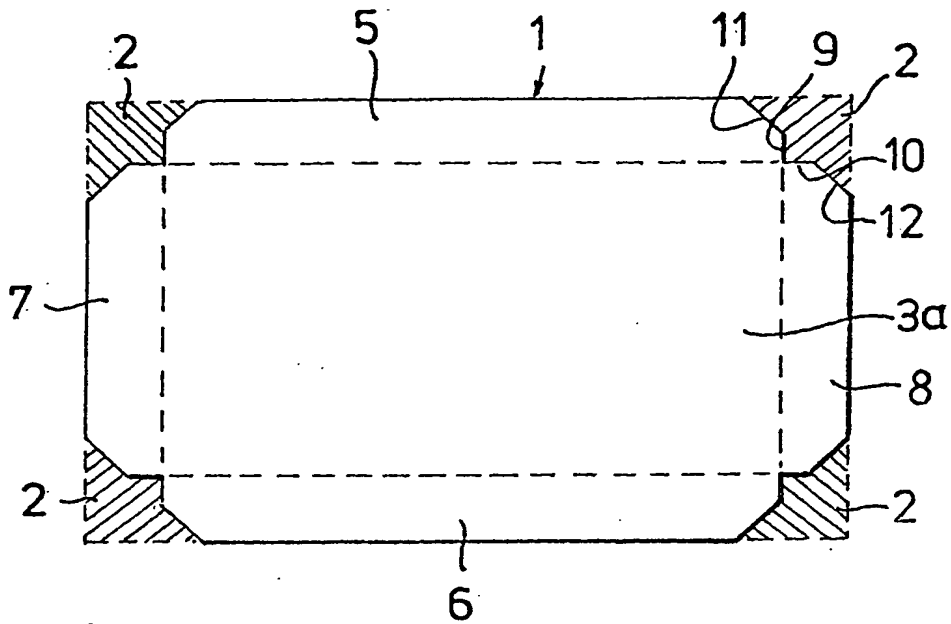


Fig. 1

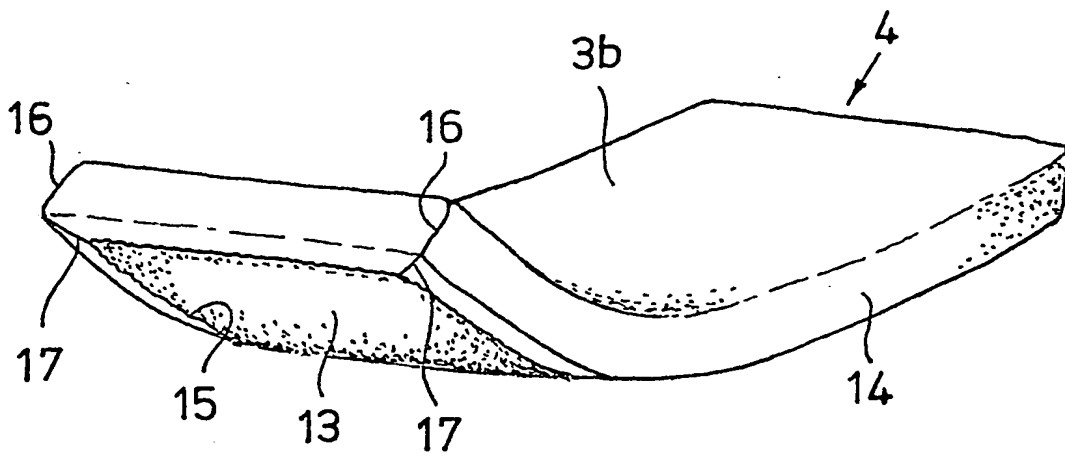


Fig. 2

## SPECIFICATION

### Mattress cover

- 5 This invention relates to a removable mattress cover which is substantially impermeable to water so as to protect the mattress from wetting as by children or incontinent persons. For this purpose, hospital or cot mattresses
- 10 are usually provided with an impervious plastics cover enveloping the mattress, either as a permanent cover or as a removable cover with a side zip fastener. Another way of dealing with the problem is to insert a draw sheet,
- 15 traditionally of rubber, between the mattress and the under-sheet (that is the sheet on which the person lies).

- According to this invention, a mattress cover comprises a fabric panel for overlying the
- 20 upper surface of a mattress and provided with means for releasably engaging the mattress and thereby holding the fabric panel in said overlying position, the fabric panel comprising a fibrous textile fabric bonded on its underface
- 25 (when in said overlying position) to a flexible layer which is substantially impermeable to water.

- The means for releasably engaging the mattress may comprise a skirt integral with the
- 30 fabric panel and extending along at least two opposite margins of the fabric panel. The skirt is adapted to engage the mattress by fitting over at least two opposite sides of the mattress and partially underneath the mattress
- 35 adjacent to said sides. Preferably the skirt is continuous, extending around all the margins of the fabric panel.

- Using a rectangular fabric panel for the usual rectangular mattress as an example, a
- 40 suitable partial skirt may extend along one pair of opposite margins of the fabric panel, preferably the shorter top and bottom margins, and a little way around each corner along the other pair of opposite margins. The
- 45 skirt is sufficiently deep that it fits partially underneath the mattress and the corners of the skirt may be sewn so that in effect the skirt comprises two pockets at opposite margins of the fabric panel. The mattress can
- 50 then be fitted into these pockets so that the fabric panel is held in place on its upper surface.

- The free margin of the skirt is preferably bound or elasticated to improve the closeness
- 55 of fit on the mattress.

- Other means for releasably engaging the mattress which may be used alternatively or additionally to a full or partial skirt include attached tying tapes and attached tabs bearing
- 60 "Velcro" (R.T.M.) fabric for engaging with mating "Velcro" fabric on other attached tabs or on the mattress itself.

- The fibrous textile fabric of the fabric panel may be of woven, knitted or non-woven construction and may comprise yarns of any of
- 65

- the natural, regenerated or synthetic fibres. In order to provide comfort, particularly in the case when no additional under-sheet is used on top of the mattress cover, and to prevent
- 70 'strike-through' of the water-impermeable layer bonded to the underface, the preferred fabric has a pile on its exposed face. Suitable fabrics include woven terry, knitted terry and non-woven loop-pile fabrics such as those
- 75 made on a 'Mailpol' stitch-bonding machine. A degree of stretch is preferred for giving a wrinkle-free stretch fit on the mattress and for ease of fitting, and for this purpose a stretch knitted terry fabric is suitable.

- 80 The flexible, substantially water-impermeable layer may comprise any suitable water-impermeable material including synthetic and natural polymeric materials such as rubbers, silicones, polyurethanes, polyvinyls, and poly-
- 85 olefins. It may be bonded to the fabric by laminate bonding of a preformed layer or by coating the fabric with the material in liquid phase, or by the hybrid technique of transfer coating in which the liquid phase material is
- 90 coated onto a temporary support, usually paper, and the coated layer is then transferred to the fabric by pressure rollers.

- In addition to being substantially water-impermeable, the layer preferably has a degree of permeability to air and to water vapour so as to allow a through flow of the
- 95 same between the mattress and the person lying on the mattress cover. This is desirable in the case of persons confined to bed, as
- 100 with long stay hospital patients, for helping to prevent bedsores. Some commercial polyurethane formulations, such as are used to coat fabrics for the artificial leather market, have a permeability to air and water vapour which
- 105 makes them useful in this respect.

- Examples of suitable fabrics for coating for making mattress covers according to the invention are as follows, the percentage fibre contents being quoted by weight:—

- 110 1. A stretch weft knitted terry fabric sold by Clutson-Penn (U.K.) Limited under Quality No. 63100 with an overall fibre content of 51 per cent cotton, 25 per cent viscose rayon and 24 per cent nylon, the nylon comprising
- 115 the ground and the cotton and rayon the pile, and the fabric weight being 243 g/m<sup>2</sup>.

2. A loop-pile non-woven fabric made on a 'Malipol' machine and sold by Furzebrook Knitting Co. Limited under Quality No. 1001,
- 120 and comprising a nylon scrim (27 per cent) and a cellulosic loop pile (73 per cent) with a fabric weight of 200 g/m<sup>2</sup>.

3. A lightweight weft knitted terry fabric sold by Exquisite Fabrics Limited under Quality No.
- 125 55706 and comprising a nylon ground (37 per cent) and a cotton pile (63 per cent) with a fabric weight of 140 g/cm<sup>2</sup>.

- All three fabrics were transfer-coated on the non-pile face only by Derby-Nyla Limited using a polyurethane coating formulation based
- 130

on an aromatic polyester. The adhesive tie coat was put on at a weight of 35–40 g/m<sup>2</sup> and the fully reacted top coat at a weight of 35 g/m<sup>2</sup>.

- 5 All three coated fabrics were substantially impermeable to water and had a degree of air and water vapour permeability which made them particularly suitable for use in making the mattress covers of the invention. The  
10 coated stretch terry fabric was suitable for making adult size mattress covers for hospital use, with the coated Malipol fabric suitable for a cheaper version. The coated lightweight terry fabric was suitable for making cot or  
15 perambulator mattress covers.

The invention is illustrated by the accompanying drawing in which:—

- Figure 1* is a plan of a fabric blank for a mattress cover according to the invention, and  
20 *Figure 2* is a perspective diagram of a mattress cover according to the invention in position on a mattress.

- Referring to Fig. 1, a fabric blank 1 is of generally rectangular shape with mitres 2 of the shape shown cut from each corner (the shaded areas). The blank comprises a rectangular centre panel 3a (defined by the dashed line) which is to constitute the overlying panel 3b of the finished mattress cover 4 (shown in  
25 Fig. 2) together with side skirt panels 5 and 6 and end skirt panels 7 and 8.

- In order to make the mattress cover 4 from the blank 1, adjacent end and side skirt panels are joined together, for example by  
35 sewing, at the mitred corners. Thus, at each corner, edge 9 is sewn together with edge 10 and edge 11 is sewn together with edge 12.

- The resulting mattress cover 4 is shown in Fig. 2 in position on a mattress 13 and it can be seen that the skirt panels of the blank together constitute a continuous skirt 14 around the overlying panel 3b. The mattress 13 is shown with one end tilted up to reveal how the skirt, which has been elasticated all  
45 around its free margin 15, fits around the sides and partially underneath the mattress. The seams 16 are formed by the joining of the edges 9 and 10 of the mitred corners of the blank, and the seams 17 similarly from  
50 edges 11 and 12.

- The mattress cover 4 is of course fitted on the mattress 13 so that the constituent fabric of the overlying panel 3b is positioned with the substantially water-impermeable layer as  
55 the underface, i.e. against the mattress.

## CLAIMS

1. A removable mattress cover comprising a fabric panel for overlying the upper surface  
60 of a mattress and provided with means for releasably engaging the mattress and thereby holding the fabric panel in said overlying position, the fabric panel comprising a fibrous textile fabric bonded on its underface (when in  
65 said overlying position) to a flexible layer

which is substantially impermeable to water.

2. A mattress cover as claimed in Claim 1 in which the fibrous textile fabric has a pile on its exposed face.  
70 3. A mattress cover as claimed in Claim 1 or Claim 2 in which the fibrous textile fabric is a stretch fabric.  
4. A mattress cover as claimed in any of Claims 1 to 3 in which the fibrous textile  
75 fabric is a knitted fabric.  
5. A mattress cover as claimed in any of Claims 1 to 3 in which the fibrous textile fabric is a stitch-bonded non-woven fabric.  
6. A mattress cover as claimed in any of  
80 Claims 1 to 5 in which the flexible layer is permeable to air and to water vapour.  
7. A mattress cover as claimed in any of Claims 1 to 6 in which the flexible layer comprises a layer of a polyurethane.  
85 8. A mattress cover as claimed in any of Claims 1 to 7 in which the means for releasably engaging the mattress comprises a skirt integral with the fabric panel and extending along at least two opposite margins thereof,  
90 and being adapted to engage the mattress by fitting over at least two opposite sides of the mattress and partially underneath the mattress adjacent to said sides.  
9. A mattress cover as claimed in Claim 8  
95 in which the free margin of the skirt is bound or elasticated.  
10. A removable mattress cover substantially as hereinbefore described with reference to and as illustrated by the accompanying  
100 drawing.

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